Richard Frydrych
richard.frydrych@cirad.fr
Jean-Paul Gourlot
jean-paul.gourlot@cirad.fr
Bruno Bachelier
bruno.bachelier@cirad.fr
CIRAD, IRU Quality
in Cotton Production
73 rue Jean-François Breton,
TA 70/16,
34398 Montpellier Cedex 5,
France

H2SD and SCT—Cotton stickiness detectors

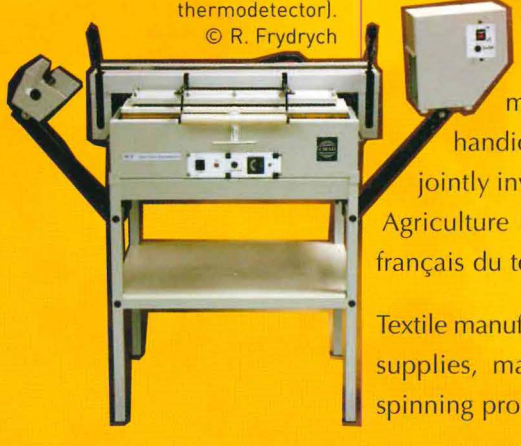
Postharvest trash contamination, such as honeydew deposited by certain insects, reduces the market value of cotton fibre. Sticky fibre may clog spinning mills, resulting in breakdowns, production losses and poor quality end products. It is essential for both producers and spinners to be able to accurately measure cotton stickiness so as to optimize the bale binding process. CIRAD thus invented two stickiness measuring instruments—the SCT thermodetector and the high-speed H2SD detector.

Detectors implemented worldwide

More than 100 SCT thermodetectors have been sold since 1988. This detector is currently being certified by the European Committee of Standardization (CEN) and is recommended by the International Textile Manufacturers Federation.

The high-speed H2SD detector has been marketed since 1998 and is also under CEN assessment for certification. Six detectors are presently operational in USA, France and Egypt.

These detectors are manufactured and marketed by SYDEL, a Montpellier-based company.



SCT (sticky cotton thermodetector).
© R. Frydrych

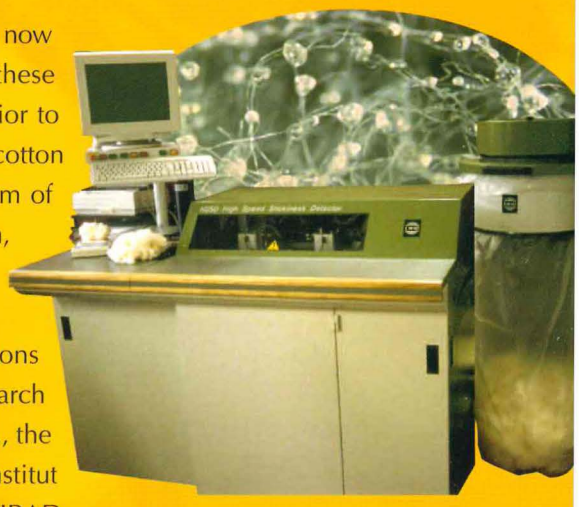
Fibre stickiness measurement concept

The CIRAD Cotton Technology Laboratory has invented instruments for measuring cotton stickiness to help overcome this problem in the spinning process. These instruments—the sticky cotton thermodetector (SCT) and the high-speed stickiness detector (H2SD)—were automated and tailored for industrial use.

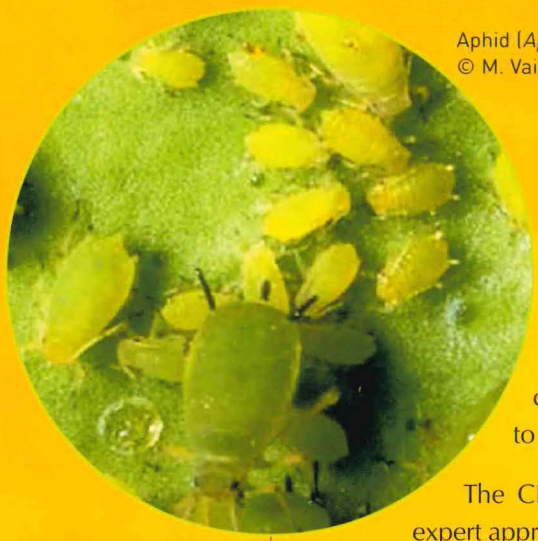
The concept involves quickly increasing the humidity of honeydew by combining heat input and pressure applied to a cotton sample. Honeydew is deposited on a neutral substrate for visual measurement or using a system with a camera and image analysis software.

Countries hampered by the sticky cotton problem can now develop an effective monitoring strategy using these detectors and thus eliminate sticky cotton bales prior to processing. This avoids unfair devaluation of entire cotton batches on the world market. In 2000, with the aim of promoting nonsticky cotton production, the Common Fund for Commodities (CFC) funded research to improve marketing of cotton produced in regions handicapped by the stickiness issue. This research jointly involved the Sudan Cotton Company Ltd., the Agriculture Research Corporation (Sudan), the Institut français du textile et de l'habillement (IFTH) and CIRAD.

Textile manufacturers can then efficiently manage their yarn supplies, make suitable fibre blends and thus reduce spinning problems.



H2SD (high-speed stickiness detector).
© R. Frydrych
Background photo: Microscopic view of aphid honeydew on cotton fibre.
© CIRAD



Aphid (*Aphis gossypii*).
© M. Vaissayre

An internationally renowned laboratory

This research and these inventions have had a major impact on the entire cotton industry. The scientists convey the knowledge they have acquired to stakeholders via conferences, publications and training sessions.

The CIRAD Cotton Technology Laboratory participates in expert appraisal committees on cotton contamination and supervises graduate students in their thesis research. It has established ties and contracts with partners in USA, Germany, Switzerland, Sudan, etc. The laboratory is recognized worldwide for cotton contamination assessment, with a key confirmed role in development-oriented research.

Cotton fibre contaminated by insect droppings infected by the fumagin fungus.
© R. Frydrych and T. Erwin

Partners

France: Agence nationale de valorisation de la recherche • ENSITM, Ecole nationale supérieure des industries textiles de Mulhouse • IFTH, Institut français du textile et de l'habillement, Villeneuve-d'Ascq • UHA, Université de Haute-Alsace, Mulhouse

Europe: ICCTM, International Commitee on Cotton Testing Methods, Germany; ITMF, International Textile Manufacturer Federation, Switzerland

USA: Cotton Incorporated • ICAC, International Cotton Advisory Commitee • ITC, International Textile Center

Sudan: SCCL, Sudan Cotton Company Ltd. • ARC, Agriculture Research Corporation

For further information

Bachelier B., Frydrych R., Gourlot J.P. 2004. High speed stickiness detector (H2SD): Measurements for the cotton sector. *In* Schneider T., (ed.), Heap S.A., (ed.), Stevens J.C., (ed.). Proceedings of the 27th International Cotton Conference [CD-ROM]. Bremen, Germany: Faserinstitut Bremen e.V., 29-40. International Cotton Conference. 26, 2002/03/13-16, Bremen, Germany.

Frydrych R., Gourlot J.P., Gozé E., Lebrun B., Lassus S., Nieweadomski J.C., Drean J.Y., Lekcir M., 2004. Sampling issues for stickiness measurements. [Abstract]. *In* Proceedings of the Beltwide Cotton Conferences 2002-2004. Memphis, TN, USA, National Cotton Council of America, The Cotton Foundation, 2417 (1 p.). 2004 Beltwide Cotton Conferences, 2004/01/05-09, San Antonio, Texas, USA.

Frydrych R. 2002. Les polluants du coton : cas du collage et des débris de coque. 2 vol.: 201 p., 240 p. HDR dissertation, ENSITM, Mulhouse, France.

Gourlot J.P., Frydrych R., 2002. Improvement of the marketability of cotton produced in zones affected by stickiness. Proceedings of the final seminar, Lille, France, 4-7 July 2001. CFC, Amsterdam, Netherlands, ICAC, Washington, USA, CIRAD, Montpellier, France, IFTH, Villeneuve d'Ascq, France, SCC, Khartoum, Sudan, ARC-Cotton Research Program, Wed Medani, Sudan. CFC, Amsterdam, Netherlands, 196 p. (English and French versions).

CIRAD

CIRAD